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Seven New Records of Gobiid Fishes from Taiwan[1]

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Kwang-Tsao Shao and I-Shiung Chen (1993) Seven new records of gobiid fishes from Taiwan. *Bull. Inst. Zool., Academia Sinica* **32**(4): 229-235. We report seven new records of gobiid fishes from Taiwan: *Callogobius okinawae* (Snyder, 1908); *Fusigobius longispinus* Goren, 1978; *Gnatholepis scapulostigma* Herre, 1953; *Paragobiodon modestus* (Regan, 1908); *Paragobiodon xanthosomus* (Bleeker, 1852); *Pleurosicya mossambica* Smith, 1959; and *Trimma macrophthalma* (Tomiyama, 1936). Among them, *Paragobiodon* Bleeker, 1873 is a new genus record in Taiwan. Diagnostic characters, distribution, remarks, and color photos of each species are given.

Key words: Gobiidae, New records, Fish fauna, Fish taxonomy, Taiwan.

After a two year survey of fish fauna in the waters adjacent to Kenting National Park, a preliminary number of 409 genera and 1,015 species of marine fishes were reported (Shen et al. 1990). Among these, 34 genera and 86 species (8.47% of total species number) were gobiids. With the exception of eight unidentified or undescribed gobiid species, approximately twenty are new records for Kenting National Park; however, only ten are new additions to the recorded fish fauna of Taiwan. Three of them are not described in this paper since specimens were not collected. After re-examining all previously unidentified or unpublished gobiid specimens in our laboratory, we were able to confirm one new record of genus *Paragobiodon* and seven new records of species for Taiwan: *Callogobius okinawae* (Snyder, 1908); *Fusigobius longispinus* Goren (1978); *Gnatholepis scapulostigma* Herre (1953); *Paragobiodon modestus* (Regan, 1908); *Paragobiodon xanthosomus* (Bleeker, 1852); *Pleurosicya mossambica* Smith, 1959; and *Trimma macrophthalma* (Tomiyama, 1936).

MATERIALS AND METHOD

Except for *Gnatholepis scapulostigma* specimens which were collected from Hsiao-liu-chiu (22° 30'N, 120° 22'E), all specimens were collected from Kenting National Park (21° 50'-22° 10'N, 120° 40'-120° 50'E).

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All counts and measurements were taken according to those methods described in Masuda et al. (1984). Abbreviations used for morphometric or meristic characters include: D., dorsal fin; A., anal fin; P1, pectoral fin; P2, pelvic fin; LR, longitudinal scales; TR, transverse scale rows; Pred. S., predorsal scales. Descriptions of body color were based on fresh specimens. All specimens are on deposit in the Institute of Zoology, Academia Sinica (ASIZP).

Callogobius okinawae (Snyder, 1908)

Fig. 1

Doryptena okinawae Snyder, 1908: 103 (Okinawa, Japan).

Callogobius okinawae: Akihito and Meguro, 1975: 112; Masuda et al., 1984: 264; Myers, 1989: 234.

Material: One specimen, ASIZP-056671, 56.6mm SL, Jan. 13, 1990, Howan; 12m depth.

Diagnosis:

D. VI-I,10; A. I,8; P1. 17; P2. I,5; LR. 44; TR. 17. Head length 3.9; body depth 5.9; predorsal length 3.0; snout to second dorsal origin 1.9; snout to anal origin 1.7; caudal peduncle depth 7.3 (all in SL). Eye diameter 5.5; interorbital width 6.2; snout 3.4 (all in HL).

Maxillary does not reach eye. Head has several rows of papillae and dermal folds on snout, cheek, and opercle. Several transversal folds under lower jaw. Longitudinal rows of folds from corner of mouth and lower jaw are interrupted. Scales on nape absent anteriorly. All scales cycloid. First dorsal obtuse, middle rays are longest. Second dorsal higher than first, pointed posteriorly. Pectoral does not reach anal fin origin. Pelvic fin notched, connected by frenum and connecting membrane. Caudal lanceolate. Body color dark brown and clouded with black patches, color lighter on belly. Dorsals with several series of spots. Pectoral base with one dark patch on upper part. Caudal brown; ventral and anal whitish.

Distribution: Indo-Pacific

Remarks: This species is very similar to *C. hasseltii* (Bleeker). However, it is distinguishable by (1) scales (in *C. okinawae* cycloid and in *C. hasseltii* ctenoid); (2) the two rows of dermal folds from the corner of mouth and lower jaw are interrupted in *C. okinawae*, but uninterrupted on *C. hasseltii*.

Fusigobius longispinus Goren, 1978

Fig. 2

Fusigobius longispinus Goren, 1978: 201(Red Sea); Masuda et al., 1984: 251; Hoese (in Smith and Heemstra, 1986): 789; Myers, 1989: 238.

Material: One specimen, ASIZP-056670, 27.1mm SL, June 7, 1989, San-hai; 14m depth.

Diagnosis:

D. VI-I,9; A. I,8; P1. 19; P2. I,5; LR. 24;

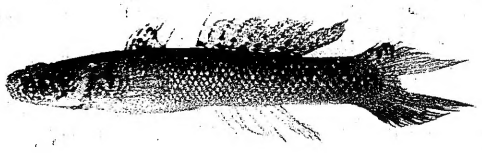

Fig. 1. *Callogobius okinawae*, 56.6 mm SL.

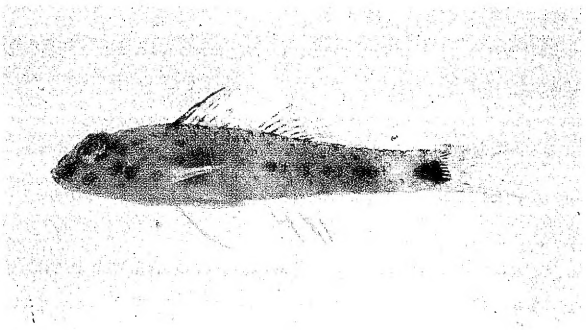

Fig. 2. *Fusigobius longispinus*, 27.1 mm SL.

TR. 7; Pred. S. 4. Head length 3.4; body depth 5.3; head width 5.4; predorsal length 2.9; snout to second dorsal origin 1.9; snout to anal origin 1.7; caudal peduncle depth 8.0 (all in SL). Eye diameter 3.5; interorbital width 10.7; snout 3.8 (all in HL).

Maxillary reaching below anterior edge of eye. Head triangular in cross-section; snout short and pointed. Body covered by ctenoid scales. Dorsal fin triangular in shape; in males, first dorsal spine elongated and extending over base of last dorsal ray when depressed; second dorsal fin ray pointed posteriorly. Anal similar to second dorsal. Pectoral fin large, extending beyond the origin of anal fin. Pelvic fin has a cup-like shape with connecting membrane and frenum. Body color whitish and somewhat translucent, with evenly-spaced round orange spots. About four patches on lateral side of body, triangular patch on caudal base. All fins whitish with orange spots on dorsal and caudal.

Distribution: From Indo-west Pacific to Red Sea.

Remarks: This species is similar to *F. neophytus* (Günther), but has round orange spots on body, and a higher first dorsal spine.

Gnatholepis scapulostigma Herre, 1953

Fig. 3

Gnatholepis scapulostigma Herre, 1953: 193 (Marshall Islands); Masuda et al., 1984: 252; Myers, 1989: 238.

Material: One specimen, ASIZP-056672, 43.0mm SL, May 30, 1991, Hsiao-liu-chiu; 8m depth.

Diagnosis:

D.VI-I, 11; A.I, 11; P1.17; P2.I, 5; LR. 28; TR. 10, Pred. S. 8. Head length 3.6; body depth 4.7; head width 4.4; predorsal length 3.0; snout to second dorsal origin 1.9; snout to anal origin 1.7; caudal peduncle depth 8.2 (all in SL). Eye diameter 4.0; interorbital 9.3; snout 2.9 (all in HL).

Maxillary does not extend to vertical of anterior eye margin. First dorsal spine extends to base of second dorsal when depressed; third and fourth longest. Last dorsal and anal ray reach caudal when depressed. Pectoral extends to second dorsal origin. Ventral has well-developed frenum. Caudal pointed. Body color golden yellow in live specimens, with six broad vertical brown bands along each side and six faint lines from head to caudal base; a large dark spot encircles yellow dot above pectoral base. Eye with vertical brown stripe. All fins translucent; several lines on dorsal.

Distribution: Indo-Pacific.

Remarks: This species is similar to *G. anjerensis* (Bleeker), but has yellow patch with dark margin on shoulder.

Genus *Paragobiodon* Bleeker, 1873

Paragobiodon Bleeker, 1873: 129. (Type species: *Paragobiodon echinocephalus* (Rüppell)).

D. VI-I,8-10; A. I,8-10. Body oblong ovate with a row of 22-24 firm ctenoid scales along body; head and nape naked to first dorsal; head covered with numerous papillary appendices; length slightly less than two times width. Some open pores on top of head, behind eye, and along preoperculum margin. Nostrils are short tubes. No barbels. Mouth very oblique. One band of filiform teeth

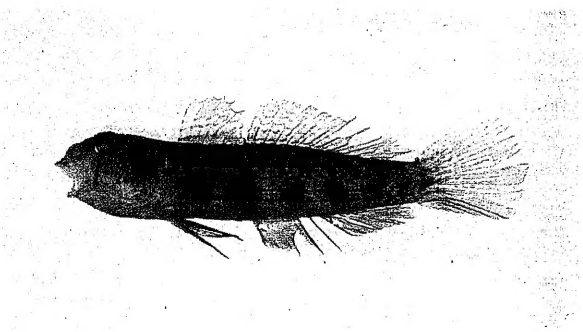

Fig. 3. *Gnatholepis scapulostigma*, 43.0 mm SL.

on each jaw, outer row enlarged. Tongue rounded. Dorsal fins very close. Pectoral without free rays. Caudal rounded. Approximately seven species in the world are distributed from Red Sea to Pacific Ocean.

Paragobiodon modestus (Regan, 1908)

Fig. 4

Gobiopterus modestus Regan, 1908: 242 (Chagos Archipelago).
Paragobiodon echinocephalus: Smith, 1960: 313.
Paragobiodon modestus: Masuda et al., 1984: 266; Hoese (in Smith and Heemstra, 1986): 799; Myers, 1989: 241.

Materials: Two specimens, ASIZP-056673, 16.7-17.1mm SL, May 31, 1979, Ho-pi-hu; 9m depth.

Diagnosis:

D. VI-I,9-10; A. I,9; P1. 20-21; P2. I,5; LR. 23-24; TR. 10-11. Head length 2.9-3.1; body depth 3.2-4.0; head width 3.3-4.3; predorsal length 2.4-2.5; snout to second dorsal origin 1.7-1.8; snout to anal origin 1.6; caudal peduncle depth 5.9-6.3 (all in SL). Eye diameter 3.4-4.0; interorbital 3.0-3.3; snout 3.9-4.4 (all in HL).

Mouth strongly curved downward, lips thick, chin heavy and sqaure. Entire nape naked. Opercles with short soft prickles or fibrils which also occur from lower margin of preopercles to mouth; ventrals also covered with similar prickles; dorsals very close together, dordal base subcontinuous; second dorsal higher than first, posterior rays elongated; anal similar to second dorsal but lower; caudal rounded; pectoral broad, approximately equal to caudal; ventral forms a cup-like disk, frenum bilobed. Body and fins uniformly dark brown; head and nape brownish red.

Distribution: Indo-Pacific and East Africa.

Remarks: This species is very similar to *P. echinocephalus* (Rüppell), but the latter species has scales on midline of belly and a head with elongated bumps.

Paragobiodon xanthosomus (Bleeker, 1852)

Fig. 5

Gobius xanthosoma Bleeker, 1852: 703 (Wahai, Ceram).
Paragobiodon xanthosomus: Jordan and Seale, 1906: 397; Herre, 1927: 175; Masuda et al., 1984: 266; Hoese (in Smith and Heemstra, 1986): 799; Myers, 1989: 241.

Material: One specimen, ASIZP-056674, 16.2mm SL, Dec. 14, 1985, Wan-li-tung; 14m depth.

Diagnosis:

D. VI-I,10; A. I,9; P1. 21; P2. I,5; LR. 23; TR. 10. Head length 3.2; body depth 3.0; head width 3.8; predorsal length 2.6; snout to second dorsal origin 1.7; snout to anal origin 1.6; caudal peduncle depth 5.9 (all in SL). Eye diameter 3.6; interorbital 3.1; snout 3.2 (all in HL).

Mouth nearly vertical; lips thick; head and nape naked to first dorsal origin; gill-

Fig. 4. *Paragobiodon modestus*, 17.1 mm SL.

Fig. 5. *Paragobiodon xanthosomus*, 16.2 mm SL.

opening located at same level as pectoral base. Ventral small; first dorsal and anal lower than second dorsal. Base of first dorsal connected to second dorsal by lower membrane. Pectoral extends beyond anus. Caudal rounded. Scales less firmly attached than other congeneric species. Body color (including all fins) uniformly greenish yellow.

Distribution: Indo-Pacific.

Pleurosicya mossambica Smith, 1959

Fig. 6

Pleurosicya mossambica Smith, 1959: 218 (Baixo Pinda); Hoese (in Smith and Heemstra, 1986): 800; Larson, 1990: 32.

Material: One specimen, ASIZP-056675, 16.9mm SL, Feb. 4, 1986, Wan-li-tung; 15m depth.

Diagnosis:

D. VI-I,7; A. I,8; P1. 19; P2. I,5; LR. 24; TR. 7. Head length 3.1; body depth 5.6; head width 5.9; predorsal length 2.3; snout to second dorsal origin 1.6; snout to anal origin 1.5; caudal peduncle depth 11.2 (all in SL). Eye diameter 3.5; interorbital 10.8; snout 2.9 (all in HL).

Mouth large, maxillary extending to vertical from midline of eye. Midline of predorsal and nape naked but scaled on either side. Median fins low; first dorsal roughly triangular and shorter than anterior rays of second dorsal, which is quite low posteriorly. Anal rays unbranched. Caudal truncated, upper half slightly longer than lower. Pectoral large, extends to below gap between dorsals. Ventrals large, frenum fimbriate. Body and head translucent and pale pink; snout and jaws very light pink, reddish-brown stripe extends from eye to upper lips. All fins translucent; lower half of first dorsal with black patch, pectoral and caudal with pale reddish-brown spots.

Distribution: Indo-Pacific and South Africa.

Remarks: The first record of this genus in Taiwan was made by Larson (1990), who also reported a new record of *Pleurosicya michii* Fourmanoi in Taiwan based on specimens we provided in Feb., 1986. After re-examining specimens from the same collection date and locality, we identified this additional new record of *Pleurosicya mossambica* Smith. These species differ in that *P. mossambica* has a robust body with a black patch on first dorsal fin and scaled nape, while *P. michii* has colorless dorsals and a more elongated body with a dark stripe running along the lower half of the body to caudal fin.

Trimma macrophthalma (Tomiyama, 1936)

Fig. 7

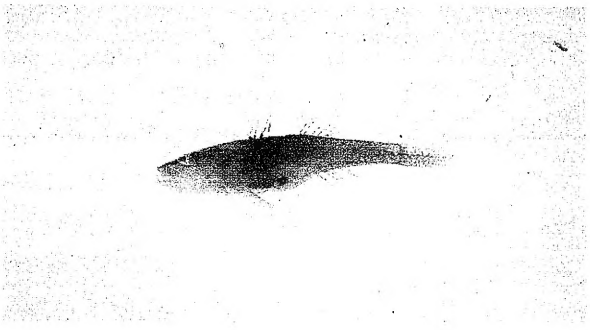

Fig. 6. *Pleurosicya mossambica*, 16.9 mm SL.

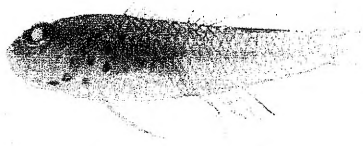

Fig. 7. *Trimma macrophthalma*, 18.2 mm SL.

Eviota macrophthalma Tomiyama, 1936: 47 (Hatizyozima, Idusiti-to, Japan).
Trimma macrophthalma: Winterbottom, 1984: 705.

Materials: Three specimens, ASIZP-056677, 15.8-19.0mm SL, Jun. 7, 1989, Sanhai; 19m depth.

Diagnosis:

D. VI-I,9; A. I,9; P1. 17-18; P2. I,5; LR. 25-27; TR. 7-8; predorsal naked. Head length 3.2-4.3; body depth 3.7-4.4; head width 4.4-5.1; predorsal length 2.6-2.7; snout to second dorsal origin 1.7-2.0; snout to anal origin 1.4-1.6; caudal penducle depth 6.6-6.9 (all in SL). Eye diameter 2.7-2.8; interorbital 8.6-10.2; snout 5.9-6.6 (all in HL).

Mouth terminal, slightly oblique upwards. Head and nape naked. Body with ctenoid scales except for cycloid scales on ventral midline and pectoral base. Second spine longest in first dorsal, reaches posterior end of second dorsal base in adult males. Rays in second dorsal nearly equal; anal fin similar to second dorsal. Pectoral reaches to vertical of anus. Pelvic fins without frenum but connected to basal membrane. Body color pale pink with several yellow and red spots on opercle and pectoral base; all fins whitish. Head and body with vermiculation on darker background in preserved specimens.

Distribution: Indo-Pacific.

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